Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ TP: \_\_\_\_\_\_\_

**CW 106: Quadratic Formula is my life.**

Identify the solutions of each function by using the quadratic formula.

*Quadratic equations can have two, one, or no real-number solutions. Before you solve a quadratic equation, you can determine how many real-number solutions it has by using the discriminant. The* ***discriminant*** *is the expression under the radical sign in the quadratic formula ().*

1. Consider the quadratic equation . Graph this equation on your calculator and sketch a *rough* drawing of the graph below. Then, calculate the discriminant of this equation.
2. Consider the quadratic equation

. Graph this equation on your calculator and sketch a *rough* drawing of the graph below. Then, calculate the discriminant of this equation.

1. Consider the quadratic equation . Graph this equation on your calculator and sketch a *rough* drawing of the graph below. Then, calculate the discriminant of this equation.

***Use the discriminant to determine the number of real-number solutions of each equation. You do not need to solve the equations.***

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ TP: \_\_\_\_\_\_\_

**CW 106: Quadratic Formula is my life.**

Identify the solutions of each function by using the quadratic formula.

*Quadratic equations can have two, one, or no real-number solutions. Before you solve a quadratic equation, you can determine how many real-number solutions it has by using the discriminant. The* ***discriminant*** *is the expression under the radical sign in the quadratic formula ().*

1. Consider the quadratic equation . Graph this equation on your calculator and sketch a *rough* drawing of the graph below. Then, calculate the discriminant of this equation.
2. Consider the quadratic equation

. Graph this equation on your calculator and sketch a *rough* drawing of the graph below. Then, calculate the discriminant of this equation.

1. Consider the quadratic equation . Graph this equation on your calculator and sketch a *rough* drawing of the graph below. Then, calculate the discriminant of this equation.

***Use the discriminant to determine the number of real-number solutions of each equation. You do not need to solve the equations.***

1. A football is punted into the air. Its height*, h,* in meters, after *t* seconds is given by the equation

.

1. How high is the ball after 1 second?
2. Find the maximum height of the ball to one decimal place.
3. When does the ball reach its maximum height?
4. When does the ball hit the ground?
5. In the shot put, an athlete throws a heavy metal ball through the air. The arc of the ball can be modeled by the equation , where *x* is the horizontal distance, in meters, from the athlete and *y* is the height, in meters, of the ball. How far from the athlete will the ball land?
6. A football is punted into the air. Its height*, h,* in meters, after *t* seconds is given by the equation

.

1. How high is the ball after 1 second?
2. Find the maximum height of the ball to one decimal place.
3. When does the ball reach its maximum height?
4. When does the ball hit the ground?
5. In the shot put, an athlete throws a heavy metal ball through the air. The arc of the ball can be modeled by the equation , where *x* is the horizontal distance, in meters, from the athlete and *y* is the height, in meters, of the ball. How far from the athlete will the ball land?